

Notice of Allowability

Application No.

10/510,087

Examiner

ANH PHUNG

Applicant(s)

MORIYAMA ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Telephone interview on March 7, 2006.
2. ☒ The allowed claim(s) is/are 1-8.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 10/1/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 3/7/06
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☒ Other Search History.

Anh Phung
ANH PHUNG
PRIMARY EXAMINER

DETAILED ACTION

1. This Office Action is responsive to the US Patent Application Ser. No. 10/510,087 filed on October 1, 2004, claims **1-8** are pending in the application.

Examiner's amendment

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. David R. Metzger on March 7, 2006.

The Abstract has been amended as follows:

On page 48, delete entire the old abstract and insert:

--- A memory apparatus capable of accurately reading out data stored in a memory element of variable resistance. The memory apparatus using a memory element of variable resistance whose resistance is variable between a high resistance state having a higher resistance than the resistance of the reference resistance element and a low resistance state having a lower resistance than the resistance of the reference resistance element, wherein the reference circuit of the resistance element and the reference resistance element connected in series between two reference potential terminals of different potentials and the memory circuit of a series connection of the resistance element and the memory element of variable resistance with the

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reference circuit and the memory circuit connected in parallel with each other, and the reference resistance element is constructed to have a variable resistance ---

The examiner's amendment has been made in order to place the application in a condition for allowance.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

4. This office acknowledges receipt of the following items from the Applicant:

Information Disclosure Statements (IDS) filed on October 1, 2004.

Information disclosed and listed on PTO 1449 was considered.

Examiner's Statement of Reasons for Allowance

5. Claims **1-8** are allowed.

Hosoi et al. (US 2006/0002174), Matsuoka (US 7,006,371), Honda et al. (US 6,990,015), Hamaguchi (US 6,862,213) and Reohr et al. (US 6,269,040) disclose a memory device and associated method using a memory element of variable resistance and a reference resistance similar to that of the present application, but fail to teach:

"a high resistance state having a higher resistance than a resistance of a reference resistance element and a low resistance state having a lower resistance than the resistance of the reference resistance element in response to two kinds of data to be stored" as claimed in the independent claims **1-3**; the dependent claims **4-6** are also allowed; or

“a high resistance state having a higher resistance than a reference resistance and a lower resistance state having a lower resistance than the reference resistance in response to two kinds of data to be stored, wherein the reference resistance is determined as a resistance between a lowest resistance among the memory elements of variable resistances in the high resistance state and the highest resistance in the low resistance state” as claimed in the independent claim 7; or

“setting a highest resistance among part of the plurality of memory elements of variable resistance in a low resistance state as a temporary reference resistance; setting a highest resistance among memory elements of variable resistance within the remaining memory elements of variable resistance determined as having higher resistance than the temporary reference resistance in the low resistance state as a highest resistance in the low resistance state; and determining a resistance between the lowest resistance in the high resistance state and the highest resistance in the low resistance state as the reference resistance” as claimed in the independent claim 8.

Any comments considered necessary by applicants must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comment on Statement of Reasons for Allowance”.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **ANH PHUNG** whose telephone number is **(571) 272-**

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1883. The examiner can normally be reached on Monday-Friday from 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **RICHARD ELMS**, can be reached on **(571) 272-1869**. The fax phone number for the organization where this application or proceeding is assigned is **(571) 273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at **866-217-9197** (toll-free).

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AKP



**ANH PHUNG
PRIMARY EXAMINER**